Idaho Standard Practice for

Inspecting / Sampling Paint and Curing Compound

Idaho IR-7-04

1 Scope

1.1 This method is intended to cover the inspection and sampling of product components and production batches of paints and curing compounds.

2 References

2.1 ASTM D 3925 Standard Practice for Sampling Liquid Paints and Related Pigmented Coatings

2.2 Federal Standard Test Methods 141

Method 1022 Sampling for Inspection and Testing

3 Terminology

3.1 Batch – A batch is defined as a unit or quantity of material produced at one (1) operation, the weight and volume of which may vary, depending on the manufacturing facilities. As an example, a number of small mill grinds may be combined together in a larger mixer. This material will be considered as one (1) batch and should be labeled as such. Similarly, when a number of varnish cooks are reduced in the same tank the combined reduced material shall be considered as one (1) batch.

3.2 Boxing – Boxing is a method by which a product that is exhibiting settlement is uniformly remixed without the use of power agitation equipment. (Boxing is accomplished by pouring approximately 60% of the liquid portion of the material into a new clean container that is the same size or larger than the package product. Stir the remaining liquid and the settled portions of the material into a uniform thin paste.) The previously removed liquid portion is then poured slowly and with constant stirring back into the original container. The contents are finally poured back and forth from container to container until the product is uniformly mixed and a representative sample can be taken.

3.3 Inspection – Refers to the collection of documentation and visual observation of materials. Inspection does not necessitate the destruction of the packaging or physical alteration of the product. Inspection should include the examination and reporting of the condition of the material in containers, number of units involved, type, class, grade, color, review of manufacturer's documentation, or other visual considerations of the units as may be called out in the product specifications. Inspection may also include the witnessing of a sample being taken by an authorized manufacturer's representative.

3.4 Cake – Dry settlement found in the bottom of a container.

4 Apparatus

4.1 One quart metal cans for solvent based curing compounds and paints.

4.2 One quart lined metal cans for water based curing compounds and paints.

4.3 Mixing equipment consisting of stir paddles, jiffy mixers, shakers, air stirrers, mechanical roller mixers, recirculation pumps, and buckets for boxing.

4.4 Dry pigment sampling equipment consists of Keystone Sampler and Splitter.

5 Sampling at Locations

5.1 Manufacturing Plant

5.1.1. Materials are generally packaged and ready for shipment at the time of arrival of the inspector. However, in some instances when large amounts of material are involved, the manufacturer may not have filled the containers, but will hold the material in a large tank until the inspector arrives. Samples will be collected from either the containerized products or from the holding tanks.

5.2 Project Site or Fabrication Plant

5.2.1. The packaged materials are at the project site or fabrication plant and will be sampled by the inspector.

6 Inspection and Sampling Procedures

6.1 Products are inspected for uniformity and samples are taken for the purpose of having a representative quantity, from each batch of material, for physical examination and laboratory testing. The samples will be analyzed to ascertain if the materials meet the specification requirements, the covering product specification, and to determine uniformity within a batch.

6.2 No set of directions for sampling, however explicit, can take the place of judgment, skill and previous experience on the part of a person actually engaged in the sampling and in the supervision of the sampling. These directions are intended to supplement this experience and to serve as a guide in the selection of the sampling method.

6.3 All containers shall be marked with the production batch number, date of manufacture, and product name. At least one (1) sample shall be taken from each batch.

6.4 For all grades of materials, precautions shall be taken to assure the sampling apparatus and the samples themselves are not contaminated and are clean and dry. Slight contamination of the product may lead to false test results. Use the appropriate container for the type of material that is being sampled (Refer to Section 3.1 and 3.2).

6.5 The batches shall be sampled according to the applicable plan as describe within this method. Samples shall be selected at random so that they are representative of the batch.

6.6 The samples shall be of such size as to permit the performance of all inspections and laboratory tests. In most cases, one (1) quart of liquid or one (1) pound of dry material is sufficient.

6.7 To the extent possible, it is advisable that original, unopened containers within each batch be selected as samples. When individual containers are less than the one (1) quart or one (1) pound size a sufficient number of containers shall be selected to achieve the required size. Obviously it is not always convenient or economical to have samples of very large size be submitted for testing. In these cases, care must be exercised so that samples are uniform and representative of the batch of material.

6.8 For dry pigments and resins, the package shall be opened by the inspector and a representative sample taken at random from the contents. This sample shall be placed in a clean, dry, metal container closed with an air tight cover, sealed, marked and sent to the Central Laboratory.

6.9 For liquid material the original unopened containers shall be sent to the Central Laboratory. When this is not applicable the inspector shall determine, by thorough testing with a paddle or spatula, if the material meets the absence of caking requirements in the container. The inspector shall thoroughly mix the contents of the container and draw a sample as specified, normally not less than one (1) quart. This sample shall be placed in a suitable clean and dry container. The sample should be filled as full as possible to minimize air contact within the container. The container is then closed with a tight cover, sealed, marked and sent to the Central Laboratory for testing.

6.9.1. With material that has a significant amount of pigment added such as single component zinc paint the zinc settles out rather quickly. The zinc needs to be mixed extensively by the use of a jiffy mixer so that the zinc is suspended back into the binder. Continue agitation with the mixer while taking a sample to insure proper sampling of the material.

6.10 The sample container should be dry and not cooler than room temperature. Because pigmented products are dispersions and not solutions, finely divided pigment particles may settle upon standing. Consequently, thorough and careful agitation of the product before sampling is necessary to restore the product to its original, uniform condition. The method of agitation or stirring is therefore of prime importance.

6.11 6.11 Do not place samples in plastic bottles because volatile solvents may diffuse through the walls. Loss of the solvents may introduce errors in such tests as viscosity, weight per gallon and nonvolatile content as well as other properties. (Refer to Section 3.1 and 3.2 for the appropriate containers.) Place either safety clips or a safety ring on the lid of the sample container prior to shipping

6.12 When representative samples have been obtained and packaged in clean closed containers send them promptly to the Central Laboratory for testing along with all the batch and product information.

6.13 During the period between sampling and delivery, it is important that samples be kept at temperatures from 40 to 90°F. Extreme temperatures may change the properties of some products.

7 Uniformity of Samples

7.1 Clear Liquid Products. Clear liquid products require stirring prior to sampling to achieve uniformity and a representative sample. Care must be taken so that any separation, sediment, gel or other matter indicative of non-uniformity is reincorporated back into the product prior to sampling.

7.2 Pigment Liquid Products. Pigmented liquid products require stirring prior to sampling to achieve uniformity and a representative sample. Where there is settling, or separation of constituents, these should be reincorporated by “boxing” or other means of agitation that will sufficiently homogenize the sample to uniformity prior to sampling.

7.3 Dry Pigments and Powders. Ordinarily dry pigments, powders, hard resins, etc. are more likely to be uniform than pigmented liquids. Care must be exercised to ensure that samples of these materials are representative of the batch being sampled. For sampling very large containers of these materials a Keystone Sampler and Sample Splitter should be used.

8 Sampling According to Container Size

8.1 Containers Smaller Than 5 Gallons.

8.1.1. When the batch to be sampled is contained in multiple small containers and batch numbers are marked on the containers, put all containers from the same batch together. From each batch select at random one percent (1%) of the containers, but not more than five (5) containers, for sampling. For example, it there are 275 containers in a batch, randomly select three (3) for sampling. A minimum of one (1) sample is required per batch.

8.1.2. After selection of the containers to be sampled, thoroughly agitate or stir the contents. Acceptable methods of mixing are mechanical shaking or stirring, or hand stirring with a paddle, followed by boxing. Mechanical shakers are desirable for most materials since there is thorough agitation in a closed container. Before mechanical shaking, open the container and check to be sure that the pigment has not caked on the bottom of the container. If caking exists, stir manually or with a jiffy mixer to break up the hard settling and then put the containers on the mechanical shaker again. Agitate products having a weight per gallon of 11 lbs/gal or less on the shaker for 5 minutes and those with a weight per gallon of more than 11 lbs/gal for 10 minutes. After agitation, check the products for uniformity again before sampling. If the product is not uniform repeat the process until the product is brought into uniform consistency. After thorough agitation decant a one (1) quart can full and send to the Central Laboratory for testing.

8.2 Containers Larger than 5 Gallons.

8.2.1. From each batch select at random five percent (5%) of the containers, but not more than three (3) containers, for sampling. A minimum of one (1) sample is required per batch. Drums may be stirred satisfactorily by several means. With open-head types, mechanical or manual stirring may be used. Some drums contain their own agitators; drum shakers or rollers may also be used. After agitation, check the products for uniformity again before sampling. If the product is not uniform repeat the process until the product is brought into uniform consistency. After thorough agitation decant a one (1) quart can full and send to the Central Laboratory for testing.

8.3 Containers from 250 to 500 Gallons (Totes)

8.3.1. From each batch randomly select one (1) tote per 5000 gallons of material for testing. For example if the batch represents 12,000 gallons take three (3) samples from three (3) separate totes within the batch. The material shall be thoroughly agitated by using mechanical mixers or recirculating the material. Recirculating the material shall be done until the entire contents have been turned over within the tote a minimum of three (3) times. The pump rate shall be adequate to achieve this recirculation rate of the material within 1 hour. Alternatively the material may be pump into an empty tote and then pumped back and forth, a minimum of three (3) times, similarly to boxing the material until the material is thoroughly agitated and mixed. Once complete mixing has been accomplished open the valve of the tote and allow a minimum of 2 gallons of product to flow into a 5 gallon bucket. Examine the product for uniformity and then take a one (1) quart sample from the 5 gallon bucket and send it to the Central Laboratory for testing.

8.3.1.1. Care should be used in pump selection as the gear driven pumps can cause shearing in waterborne products causing the emulsion components to separate.

8.4 Alternative Sampling Procedure.

8.4.1. When it is impractical, inconvenient, or dangerous to take samples as described above, and where permitted, samples may be taken in the manufacturer’s plant during filling

operations or in the production line as applicable. In such cases samples should be taken near the beginning, in the middle, and near the end of the operation. These individual samples should be a minimum of one (1) quart each. Sampling in this manner must be supervised by a representative of the purchaser. Once the three (3) samples have been collected mix them together uniformly, decant the product into a one (1) quart can and send the sample to the Central Laboratory.

8.5 Composite Samples.

8.5.1. While not recommended, occasionally composites samples may be permitted for economy in testing. The use of composite samples requires prior approval of the Central Laboratory. When permitted a composite sample shall be used to represent the batch of material in its final state.

9 Disposition of Samples

9.1 Unless otherwise specified each sample taken as directed herein shall be sealed in a clean, dry one (1) quart size container and marked so as to clearly identify the batch number of material involved. Unless otherwise specified, each sample shall be inspected and sampled in accordance with these specifications. Failures of any sample to meet the product specification requirements shall be cause for rejection of the material.

10 Termination of Sampling

10.1 When in the course of sampling, the material is found to have serious and obvious defects sampling shall be terminated and resumed only after defects have been corrected or the defective material is replaced.

11 Time of Sampling

11.1 Samples shall be taken as soon as possible after manufacturing or delivery to a site location.

12 Laboratory Testing Time

12.1 Allow a minimum of two (2) weeks for test results on all products after they have been received into the Central Laboratory.